



Brent Norberg - NOAA Federal &lt;brent.norberg@noaa.gov&gt;

---

**Re: Come over on Friday**

1 message

**Amy MacFadyen** <amy.macfadyen@noaa.gov>

Tue, Mar 27, 2012 at 3:27 PM

To: Brent Norberg &lt;brent.norberg@noaa.gov&gt;

Hi Brent,

The arrows are currents and the length does indicate speed. There is a small scale on the bottom right which shows the length of an arrow for a 50 cm/s current. The alongshore or North/South component of wind is actually shown in one of the panels on the right -- positive is northward wind.

I don't know much about how a dead orca sinks or floats. I was assuming it sank to the bottom right after it died, then re-floated after a few days? The leeway or windage on floating whale carcasses can be quite high -- on the order of 5% of the wind speed. But you are correct that if it is floating lower in the water or below the surface the wind influence would be reduced. Did they come back with an estimate on how long it was dead before it came ashore?

-Amy

On Tue, Mar 27, 2012 at 2:15 PM, Brent Norberg &lt;brent.norberg@noaa.gov&gt; wrote:

Hi Amy, Is there information on current speed as indicated by the varying length of the arrows on this forecast site? or are the arrows a depiction of wind speed. I assume the animal was floating at or below the surface initially and would approximate the current speed with little influence from wind then beginning day 4 would be floating higher and wind influence would increase.

On Fri, Mar 23, 2012 at 12:40 PM, Amy MacFadyen &lt;amy.macfadyen@noaa.gov&gt; wrote:

Hi Brent,

Sorry about the bad choice of colors -- the "cyan" drifters are the Aug 17 release. There are four tracks total in this case, they are go northward, first moving within a clockwise eddy that brings two ashore (one near Long Beach.)

The dots indicate a 12 hr time interval, so the two that come ashore do so fairly rapidly. (These were all released on the ebb tide).

I also forgot to point you towards the Columbia River forecast model run by folks in Portland. Check out:

<http://www.ccalmr.ogi.edu/datamart/virtualcolumbiariver/forecasts/products?fcast=f26&run=today>

You can change the dates to look at the forecasts from Feb. 11 and it shows the clockwise circulation and northward flow.

Its possible we could get the model fields and do some simulations with particles, but I am not sure it will add value unless we have some specific scenarios we want to investigate.

-Amy

On Fri, Mar 23, 2012 at 11:14 AM, Brent Norberg &lt;brent.norberg@noaa.gov&gt; wrote:

Amy, As a color challenged person I'm guessing the cyan drifters are the color assigned to August 9 releases is that correct? If that right I don't get how more cards end up going southward against the wind ? Also do the do the dots indicate a time interval?

On Fri, Mar 23, 2012 at 10:36 AM, Amy MacFadyen <[amy.macfadyen@noaa.gov](mailto:amy.macfadyen@noaa.gov)> wrote:

Hi Brent,

I am very sorry I couldn't attend the meeting this morning. As you discussed with Bushy this morning, based on the location the whale came ashore, and what the winds were the previous week (predominantly downwelling favorable; i.e. blowing towards the north) the most likely scenario in my opinion is that the whale died in the vicinity of the Columbia River mouth or in the estuary. We've seen in the past, that the freshwater at the coast can act as somewhat of a barrier to onshore transport unless onshore winds are really strong -- for example, drifters approaching the coast off Long Beach from offshore of the plume generally stay offshore and move rapidly northward.

Currents on both the Oregon and Washington shelves would have been northward. So it is also possible the whale could have died further to the south off Oregon. With winds being an average of ~10-15 kts over the previous week, combined shelf currents and winds could have moved a floating carcass several hundred km towards the CR mouth.

I am attaching a couple figures which illustrate the circulation in this region. One is a figure from a colleague at UW, who deployed surface drifters off the mouth of the CR in 2005 [CTdrifters\_R3W.gif] -- focus on the cyan drifter tracks, these are during the kind of winds we had in Feb.

Also attached is a conceptual cartoon [Hickey09JGR114.bmp, the first panel is currents during spring downwelling winds]. Our situation would look similar to this -- except the flow over the entire shelf would be northward as opposed to only on the inner shelf as shown here.

Sorry we can't be more specific in a hindcast. There are just so many unknowns. If you want to get together to talk more, please feel free to contact me.

Enjoy the sunshine today!

-Amy

On Fri, Mar 23, 2012 at 7:42 AM, Brent Norberg <[brent.norberg@noaa.gov](mailto:brent.norberg@noaa.gov)> wrote:

Thanks Bushy, I'll see you at 0900.. bn

On Thu, Mar 22, 2012 at 3:46 PM, Glen (Bushy) Watabayashi <[glen.watabayashi@noaa.gov](mailto:glen.watabayashi@noaa.gov)> wrote:

Hey Brent,

I had Amy take a look at the challenge of figuring out where the whale could have come from and she has some results to share. Amy did a lot of field work off the Washington coast and knows the oceanography as well as anyone out there and she has a story to share about how things behave off the Columbia River mouth.

0900 would be a good time to come.

Call me if you need to

6324 or Amy at 6954

